

CLAIMS

1. An embedded resistor comprising a thin film cermet material deposited by sputtering on a substrate and having a nearly zero TCR, said thin film cermet  
5 material comprising  $M_xSi_yO_z$ ,

where  $M = W$  or  $Ta$

2. The invention according to claim 1 wherein deposition onto the substrate is performed by sputtering of a composite target of  $W$ , or  $Ta$ , and  $SiO_2$ .

10 3. The invention according to claim 1 wherein deposition onto the substrate is performed by co-sputtering of two targets: a first target of  $W$  or  $Ta$  and a second target of  $SiO_2$ .

15 4. The invention according to claim 2 wherein said substrate is copper foil.

5. The invention according to claim 3 wherein said substrate is copper foil.

20 6. The invention according to claim 2 wherein said thin film cermet material is deposited by r.f. sputtering on a substrate.

7. The invention according to claim 3 wherein sputtering of said  $SiO_2$  target is r.f. sputtering.

25 8. A method for forming a cermet thin film resistor such as the one described in claim 6 including the steps of:

depositing said thin film resistor on a substrate utilizing r.f. magnetron sputtering with argon gas; and,

controlling the resistivity and TCR of said cermet thin film resistor by varying the sputtering power and pressure.

9. A method for forming a cermet thin film resistor such as the one described in claim  
5 7, which includes the steps of: deposition of the film on a substrate utilizing r.f. and d.c. magnetron sputtering with argon gas; and controlling the resistivity and TCR of the cermet thin film by varying the sputtering power and pressure.

10. The method according to claim 8 wherein the resistor film is approximately 1000 angstroms thick and the substrate comprises an oxidized silicon substrate; the method including the further steps of controlling sputtering power and pressure to obtain Rs and TCR values in accordance with the following table:

Rs (ohms/Square)	TCR (ppm/C)	Pressure (mTorr)	Power (kW)
250	≤-200	10	2.0
400	≤-220	14	1.0
800	≤-260	14	0.4
1500	≤-400	18	0.4